**IT Applications Unit 3, AOS 1, Online Communities**

1. Complete the following, from pgs, 28- 32: **Transmission media**

**Networks are classified according to below and we will study the following:**

1. Network Categories: LAN, WAN
2. Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet
3. Network communication standards
4. Network hardware and software
5. **Transmission media**
6. Network security

**Transmission media**

**Physical Transmission**

**Twisted – pair cable**

1. What is twisted pair cable?

Twisted pair cable are used for most star networks. There are eight wires twisted in four separate pairs and then twisted as a group.

1. Why do new networks use CAT 5E or CAT 6 rather than CAT 3?

Networks use CAT5E or CAT6 rather than CAT3 because it has a faster transmission rate.

1. What are some disadvantages of CAT 5E and why is it used in so many installations?

A disadvantage of CAT5E is that it can only be 100m in length. It is used in many installations because it is a good backbone for a network. Usually network designers use 85 metres for the backbone and 5 for the for the connection between a backbone and a network device.

1. What type of networks is this cable largely used in?

Star networks typically use twisted pair cable.

**Coaxial Cable**

1. Describe the characteristics of this cable.

Coaxial cable has an inner wire surrounded by installation and then a copper, aluminium, tin or lead foil as another layer of protective installation.

1. What network is it used in?

Coaxial cable is used in bus networks.

**Fibre-optic cable**

1. Describe the characteristics of this cable.

Fibre optic cable consists of glass or plastic strands that can transmit light pulses. Can reliably carry data for two kilometres.

1. Why is fibre-optic cable often used to connect major switches inside buildings as well as between buildings.

Fibre optic cable is often used in major switches because it is relatively cheap and are capable of transferring large files.

1. What are the disadvantages of this cable?

Fibre optic cabling can only handle one way traffic so this becomes a disadvantage.

**Wireless Transmission,** p 30

**Radio Waves**

1. What is required for radio transmissions to occur?

For radio transmissions to occur a transmitter is needed to broadcast the radio signal and a receiver is needed to accept it.

1. Wi-Fi networks use radio waves. What are its advantages over a cable network and what are its disadvantages?

Radio waves are often used in heritage listed buildings because they are not allowed to have computer cabling in there. Another advantage to this transmission is that you can be anywhere within the building and still be able to connect to the network. However radio waves have some disadvantages as well; they are noisier and slower than cables.

1. Describe the characteristics of Bluetooth.

Bluetooth is a standard that uses short radio waves to transmit data over a distance of up to ten metres. The data transfer rate of Bluetooth is 2 mbps.

**Microwaves**

1. Describe the characteristics of microwave transmission.

Microwave transmission requires a line of sight and no obstruction between the sending and receiving dish. It can handle very high data transmission rates over short distances and its spectrum ranges from 3GHz to 3000GHz.

1. What are the limitations of microwave transmission?

The biggest limitation of microwave transmission is their need for line of sight to be able to transmit data, this is why microwave towers are located on tops of hills, mountains and large buildings.

**Satellite**

1. Satellite transmission can be in what forms?

Satellite transmission can be in the form of radio waves or microwaves.

1. What are the limitations of this form of transmission?

The major limitation with satellite transmission is the distance the waves have to travel to the satellite and then back to the earth station.

1. Who might use this form of transmission?

Satellite transmission is often used for television broadcasts, videoconferencing, GPS’ and internet connections. People who live in rural communities should only use satellite transmission as an alternative.

**Infra-red**

1. Describe the characteristics of infra-red transmission.

Infa-red transmission used the same technology as the TV and video remote controls. It is good over distances no longer than 5 metres but the data transfer rate is slow compared to all cables.

1. Why is radio wireless networking preferable to infra-red wireless networking?

Radio wireless networking is preferable to infa-red because it encrypts the data before it broadcasts and doesn’t need line of sight to be able to transmit data.